

IN THE SPECIFICATION

Page 1 and all subsequent pages, in the headings, please cancel “WO 2004/067661...PCT/EP2004/000093”.

Page 1, before the first line of text, please insert:

--This is a 371 of PCT/EP2004/000093 filed 9 January 2004 (international filing date).--

Page 1, line 15, please insert:

--Background of the invention--

Paragraph beginning on page 1, line 26 (amended)

In the flexographic printing process, flexible printing plates are bonded adhesively to printing cylinders. This bonding is generally carried out using double-sided PSA tapes, on which very stringent requirements are imposed. For the printing process, the PSA tape is required to have a certain hardness but also a certain elasticity. These properties must be set very precisely in order that the printed image produced yields the desired result in accordance with the requirements. Further stringent requirements are imposed on the PSA itself, where the bond strength must likewise be high so that the printing plate does not detach from the double-sided PSA tape or the PSA tape from the cylinder. This must be so even at increased temperatures ~~of 40—60°C~~ of 40 – 60°C and at high printing speeds. In addition to this property, however, the adhesion properties of the PSA must also be reversible, since it is often necessary to bond the printing plates and then to detach them again for repositioning. This detachability should also exist in the case of an adhesive bond over a prolonged time period (up to six months). Moreover, it is desired that the PSA tape and especially the printing plate can

be removed again without destruction thereof, i.e., without great application of force. In addition, no residues should remain on the printing plate or on the cylinder. In summary, then, very stringent requirements are imposed on the double-sided PSA tapes that are suitable for this utility.

Paragraph beginning on page 3, line 27, please cancel.

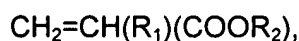
Paragraph beginning on page 3, line 33, please cancel.

Page 4, before the first line of text, please insert:
--Summary of the invention--

Page 5, paragraph beginning on line 1 (amended)

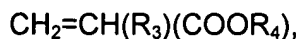
The ~~main-claim~~ invention relates correspondingly to a two-stage method of producing pressure-sensitive adhesives based on a polymer with the following monomer mixture comprising at least the following components

- (i.a) 49.5% to 89.5% by weight (based on the monomer mixture) of acrylic esters and/or methacrylic esters and/or the corresponding free acids with the following formula:



where $\text{R}_1 = \text{H}$ or CH_3 and R_2 is an alkyl radical having 1 to 10 carbon atoms or H and the homopolymer possesses a static glass transition temperature of $< -30^\circ\text{C}$;

- (i.b) 10% to 40% by weight (based on the monomer mixture) of acrylic esters and/or methacrylic esters with the following formula:



where $\text{R}_3 = \text{H}$ or CH_3 and R_4 is a cyclic alkyl radical having at least 8 carbon atoms or a linear alkyl radical having at least 12 carbon atoms and the homopolymer possesses a static glass transition temperature of at least 30°C ;

- (i.c) 0.5% to 10% by weight (based on the monomer mixture) of acrylic esters and/or methacrylic esters with the following formula:



where $\text{R}_3 = \text{H}$ or CH_3 and $\text{R}_5 = \text{H}$ or an aliphatic radical containing a functional group X, X comprising COOH , OH , $-\text{NH}$, NH_2 , SH , SO_3H , and the homopolymer possesses a static glass transition temperature of at least 30°C ,

- and in a polymerization process
at least two thermally decomposing initiators having a grafting activity of $\varepsilon < 5$ and of $\varepsilon > 10$, polymerization first taking place linearly with $\varepsilon < 5$ and then, with $\varepsilon > 10$, graft polymers being prepared
- and the crosslinking of the polymers prepared by the abovementioned process, with a fraction of 0.2% - 1.0% by weight of crosslinker

Page 6, line 5, please insert:

--Detailed description--

Paragraph beginning on page 10, line 13 (amended)

More preferred are controlled regulators for the polymerization of compounds of the following type:

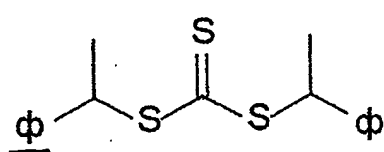
- 2,2,5,5-tetramethyl-1-pyrrolidinyloxy (PROXYL), 3-carbamoyl-PROXYL, 2,2-dimethyl-4,5-cyclohexyl-PROXYL, 3-oxo-PROXYL, 3-hydroxyimine-PROXYL, 3-aminomethyl-PROXYL, 3-methoxy-PROXYL, 3-t-butyl-PROXYL, 3,4-di-t-butyl-PROXYL
- 2,2,6,6-tetramethyl-1-piperidinyloxy ~~pyrrolidinyloxy~~ (TEMPO), 4-benzoyloxy-TEMPO, 4-methoxy-TEMPO, 4-chloro-TEMPO, 4-hydroxy-TEMPO, 4-oxo-TEMPO, 4-amino-TEMPO, 2,2,6,6-tetraethyl-1-piperidinyloxy, 2,2,6-trimethyl-6-ethyl-1-piperidinyloxy
- N-tert-butyl 1-phenyl-2-methylpropyl nitroxide
- N-tert-butyl 1-(2-naphthyl)-2-methylpropyl nitroxide

- N-tert-butyl 1-diethylphosphono-2,2-dimethylpropyl nitroxide
- N-tert-butyl 1-dibenzylphosphono-2,2-dimethylpropyl nitroxide
- N-(1-phenyl-2-methylpropyl) 1-diethylphosphono-1-methylethyl nitroxide
- di-t-butyl nitroxide
- diphenyl nitroxide
- t-butyl t-amyl nitroxide.

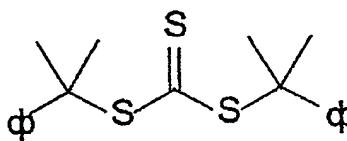
Paragraph beginning on page 11, line 12 (amended)

As a further controlled polymerization method it is possible advantageously to use atom transfer radical polymerization (ATRP) ~~to synthesize the block copolymers~~, with preferably monofunctional or difunctional secondary or tertiary halides being used as initiators and, to abstract the halide(s), complexes of Cu, Ni, Fe, Pd, Pt, Ru, Os, Rh, Co, Ir, Ag or Au (EP 0 824 111 A1; EP 826 698 A1; EP 824 110 A1; EP 841 346 A1; EP 850 957 A1). The different possibilities of ATRP are further described in US 5,945,491 A, US 5,854,364 A and US 5,789,487 A.

Page 12, formulae (TTC 1) and (TTC 2) (amended)



(TTC 1)



(TTC 2)

Paragraph beginning at page 13, line 8 (amended)

For advantageous further development in accordance with the invention, tackifier resins may be admixed to the PSAs. In principle, it is possible to use all resins soluble in the corresponding polymer. Suitable tackifier resins include rosin and rosin derivatives

(rosin esters, including rosin derivatives stabilized by, for example, disproportionation or hydrogenation) polyterpene resins, terpene-phenolic resins, alkylphenol resins, and aliphatic, aromatic and aliphatic-aromatic hydrocarbon resins, to name but a few. Primarily, the resins chosen are those which are compatible preferentially with the polymer. The weight fraction of the resins ~~in the block copolymer~~ is typically up to 40% by weight, more preferably up to 30% by weight.

Page 16, line 10, please insert:

--Brief description of the drawings

Fig. 1 illustrates an adhesive tape of the present invention being used to bond a printing plate.—

Paragraph beginning at page 19, line 30 (amended)

A 2 L glass reactor conventional for free-radical polymerizations was charged with 8 g of acrylic acid, 272 g of 2-ethylhexyl acrylate, 120 g of isobornyl acrylate and 266 g of 1:1 acetone:special-boiling-point spirit 60/95. After nitrogen gas had been passed through the reactor for 45 minutes with stirring, the reactor was heated to 58°C and 0.2 g of azoisobutyronitrile (AIBN, Vazo 64™, DuPont) in solution in 10 g of acetone was added. Subsequently the external heating bath was heated to 75°C and the reaction was carried out constantly at this external temperature. After a reaction time of 1 h a further 0.2 g of AIBN in solution in 10 g of acetone was added. After a reaction time of 5 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of acetone was added. After 6 hours the batch was diluted with 100 g of special-boiling-point spirit 60/95. After a reaction time of 7 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of acetone was added. After 10 hours the batch was diluted with 150 g of special-boiling-point spirit 60/95. After a reaction time of 24 h the reaction was discontinued and the product cooled to room temperature. Subsequently the polyacrylate was blended with 0.6% by weight of ~~aluminum(III)~~ aluminum(III) acetylacetonate (3% strength solution, acetone) and the blend was diluted to a solids content of 30% with special-boiling-point spirit 60/95 and then coated from solution onto a PET film. After drying at 120°C for 30 minutes, the application rate was 50 g/m². The technical adhesive properties were analyzed by carrying out test methods A, B and C.

Paragraph beginning on page 20, line 18 (amended)

A 2 L glass reactor conventional for free-radical polymerizations was charged with 8 g of acrylic acid, 312 g of 2-ethylhexyl acrylate, 80 g of isobornyl acrylate and 170 g of 1:1 acetone:special-boiling-point spirit 60/95. After nitrogen gas had been passed through the reactor for 45 minutes with stirring, the reactor was heated to 58°C and 0.2 g of azoisobutyronitrile (AIBN, Vazo 64™, DuPont) in solution in 10 g of acetone was added. Subsequently the external heating bath was heated to 75°C and the reaction was carried out constantly at this external temperature. After a reaction time of 1 h a further 0.2 g of AIBN in solution in 10 g of acetone was added. After a reaction time of 5 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of acetone was added. After 6 hours the batch was diluted with 100 g of special-boiling-point spirit 60/95. After a reaction time of 7 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of acetone was added. After 10 hours the batch was diluted with 150 g of special-boiling-point spirit 60/95. After a reaction time of 24 h the reaction was discontinued and the product cooled to room temperature. Subsequently the polyacrylate was blended with 0.6% by weight of ~~aluminum(III)~~ aluminum(III) acetylacetonate (3% strength solution, acetone) and the blend was diluted to a solids content of 30% with special-boiling-point spirit 60/95 and then coated from solution onto a PET film. After drying at 120°C for 30 minutes, the application rate was 50 g/m². The technical adhesive properties were analyzed by carrying out test methods A, B and C.

Paragraph beginning on page 21, line 5 (amended)

A 2 L glass reactor conventional for free-radical polymerizations was charged with 8 g of acrylic acid, 312 g of 2-ethylhexyl acrylate, 80 g of stearyl acrylate and 266 g of 1:1 acetone:special-boiling-point spirit 60/95. After nitrogen gas had been passed through the reactor for 45 minutes with stirring, the reactor was heated to 58°C and 0.2 g of azoisobutyronitrile (AIBN, Vazo 64™, DuPont) in solution in 10 g of acetone was added. Subsequently the external heating bath was heated to 75°C and the reaction was carried out constantly at this external temperature. After a reaction time of 1 h a further 0.2 g of AIBN in solution in 10 g of acetone was added. After a reaction time of 5 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of acetone was added. After 6 hours the batch was diluted with 100 g of special-boiling-point spirit 60/95. After a reaction time of 7 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of

acetone was added. After 10 hours the batch was diluted with 150 g of special-boiling-point spirit 60/95. After a reaction time of 24 h the reaction was discontinued and the product cooled to room temperature. Subsequently the polyacrylate was blended with 0.6% by weight of ~~aluminum(III)~~ aluminum(III) acetylacetonate (3% strength solution, acetone) and the blend was diluted to a solids content of 30% with special-boiling-point spirit 60/95 and then coated from solution onto a PET film. After drying at 120°C for 30 minutes, the application rate was 50 g/m². The technical adhesive properties were analyzed by carrying out test methods A, B and C.

Paragraph beginning on page 21, line 27 (amended)

A 2 L glass reactor conventional for free-radical polymerizations was charged with 8 g of acrylic acid, 352 g of 2-ethylhexyl acrylate, 40 g of isobornyl acrylate and 170 g of 1:1 acetone:special-boiling-point spirit 60/95. After nitrogen gas had been passed through the reactor for 45 minutes with stirring, the reactor was heated to 58°C and 0.2 g of azoisobutyronitrile (AIBN, Vazo 64TM, DuPont) in solution in 10 g of acetone was added. Subsequently the external heating bath was heated to 75°C and the reaction was carried out constantly at this external temperature. After a reaction time of 1 h a further 0.2 g of AIBN in solution in 10 g of acetone was added. After a reaction time of 5 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16TM, Akzo Nobel) in solution in 10 g of acetone was added. After 6 hours the batch was diluted with 100 g of special-boiling-point spirit 60/95. After a reaction time of 7 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16TM, Akzo Nobel) in solution in 10 g of acetone was added. After 10 hours the batch was diluted with 150 g of special-boiling-point spirit 60/95. After a reaction time of 24 h the reaction was discontinued and the product cooled to room temperature. Subsequently the polyacrylate was blended with 0.6% by weight of ~~aluminum(III)~~ aluminum(III) acetylacetonate (3% strength solution, acetone) and the blend was diluted to a solids content of 30% with special-boiling-point spirit 60/95 and then coated from solution onto a PET film. After drying at 120°C for 30 minutes, the application rate was 50 g/m². The technical adhesive properties were analyzed by carrying out test methods A, B and C.

Paragraph beginning on page 22, line 14 (amended)

A 2 L glass reactor conventional for free-radical polymerizations was charged with 8 g of acrylic acid, 372 g of 2-ethylhexyl acrylate, 20 g of isobornyl acrylate and 170 g of 1:1 acetone:special-boiling-point spirit 60/95. After nitrogen gas had been passed through the reactor for 45 minutes

with stirring, the reactor was heated to 58°C and 0.2 g of azoisobutyronitrile (AIBN, Vazo 64™, DuPont) in solution in 10 g of acetone was added. Subsequently the external heating bath was heated to 75°C and the reaction was carried out constantly at this external temperature. After a reaction time of 1 h a further 0.2 g of AIBN in solution in 10 g of acetone was added. After a reaction time of 5 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of acetone was added. After 6 hours the batch was diluted with 100 g of special-boiling-point spirit 60/95. After a reaction time of 7 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of acetone was added. After 10 hours the batch was diluted with 150 g of special-boiling-point spirit 60/95. After a reaction time of 24 h the reaction was discontinued and the product cooled to room temperature. Subsequently the polyacrylate was blended with 0.6% by weight of ~~aluminum(III)~~ aluminum(III) acetylacetonate (3% strength solution, acetone) and the blend was diluted to a solids content of 30% with special-boiling-point spirit 60/95 and then coated from solution onto a PET film. After drying at 120°C for 30 minutes, the application rate was 50 g/m². The technical adhesive properties were analyzed by carrying out test methods A, B and C.

Paragraph beginning on page 23, line 2 (amended)

A 2 L glass reactor conventional for free-radical polymerizations was charged with 8 g of acrylic acid, 192 g of 2-ethylhexyl acrylate, 200 g of isobornyl acrylate and 170 g of 1:1 acetone:special-boiling-point spirit 60/95. After nitrogen gas had been passed through the reactor for 45 minutes with stirring, the reactor was heated to 58°C and 0.2 g of azoisobutyronitrile (AIBN, Vazo 64™, DuPont) in solution in 10 g of acetone was added. Subsequently the external heating bath was heated to 75°C and the reaction was carried out constantly at this external temperature. After a reaction time of 1 h a further 0.2 g of AIBN in solution in 10 g of acetone was added. After a reaction time of 5 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of acetone was added. After 6 hours the batch was diluted with 100 g of special-boiling-point spirit 60/95. After a reaction time of 7 hours 0.8 g of bis(4-tert-butylcyclohexanyl) peroxydicarbonate (Perkadox 16™, Akzo Nobel) in solution in 10 g of acetone was added. After 10 hours the batch was diluted with 150 g of special-boiling-point spirit 60/95. After a reaction time of 24 h the reaction was discontinued and the product cooled to room temperature. Subsequently the polyacrylate was blended with 0.6% by weight of ~~aluminum(III)~~ aluminum(III) acetylacetonate (3% strength solution, acetone) and the blend was diluted to a solids content of 30% with

special-boiling-point spirit 60/95 and then coated from solution onto a PET film. After drying at 120°C for 30 minutes, the application rate was 50 g/m². The technical adhesive properties were analyzed by carrying out test methods A, B and C.

Paragraph beginning on page 23, line 24 (amended)

A 2 L glass reactor conventional for free-radical polymerizations was charged with 8 g of acrylic acid, 352 g of 2-ethylhexyl acrylate, 40 g of isobornyl acrylate and 170 g of 1:1 acetone:special-boiling-point spirit 60/95. After nitrogen gas had been passed through the reactor for 45 minutes with stirring, the reactor was heated to 58°C and 0.2 g of azoisobutyronitrile (AIBN, Vazo 64TM, DuPont) in solution in 10 g of acetone was added. Subsequently the external heating bath was heated to 75°C and the reaction was carried out constantly at this external temperature. After a reaction time of 1 h a further 0.2 g of AIBN in solution in 10 g of acetone was added. After 6 hours the batch was diluted with 100 g of special-boiling-point spirit 60/95. After 10 hours the batch was diluted with 150 g of special-boiling-point spirit 60/95. After a reaction time of 24 h the reaction was discontinued and the product cooled to room temperature. Subsequently the polyacrylate was blended with 0.6% by weight of ~~aluminum(III)~~ aluminum(III) acetylacetonate (3% strength solution, acetone) and the blend was diluted to a solids content of 30% with special-boiling-point spirit 60/95 and then coated from solution onto a PET film.

Page 27, please cancel the heading "Claims", and substitute

--We claim:--